UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,893	06/04/2004	Akan Lin	FTCP0038USA	3892

27765 7590 01/12/2007	EXAMINER
NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116	BATAILLE, PIERRE-MICHEL

ART UNIT	PAPER NUMBER
2186	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 November 2006</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-10</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-10</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   The present Office Action is taken in response to Applicant's communication filed

08 November 2006 responding to Non-Final Rejection dated 09 August 2006.

Applicant's amendments and/or arguments have been considered with the results that

follow.

2.   claims 1-10 are pending in the application under prosecution.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-10 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

5.   Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by US

7,100,018 (Zhang et al).

With respect to claims 1 and 8, US 7,100,018 discloses a method of determining whether a virtual address corresponds to a physical address in a translation lookaside buffer (TLB), the virtual address comprising a plurality of bits *(determining whether a virtual address is stored in a translation lookaside buffer (TLB), the TLB including a plurality of entries)*, the translation lookaside buffer (TLB) comprising a plurality of tag addresses and page types *(TLB including a virtual address tag and wherein the entries include a minimum virtual page size bit string and a variable bit string (corresponding to page types))*, and the physical addresses corresponding to each tag address, the method comprising: (a) receiving a virtual address; (b) setting the page type of the virtual address according to the rank of the page types *(decoding a page size stored in the variable bit string of the matching entry and a data field associated with the matching entry)*; (c) fetching index bits and a tag compared address from the page type *(inspecting a first bit stored in a 1-bit field of the TLB)*; (d) comparing the page type of the virtual address and the tag compared address with the page types and the tag addresses in the TLB *(determining whether the first bit string matches the minimum virtual page size bit string of one of the entries)*; and (e) determining the rank of the page type if the page type of the virtual address in step (b) and the tag compared bits in step (c) correspond with a page type and a tag address in the TLB *(wherein the decoding includes determining a set of bits in the variable bit string, i.e. determining whether the first bit string matches the minimum virtual page size bit string of one of the entries, determining whether the first bit*

indicates that at least another bit is needed to represent the page size). [See fig. 7,

8, Col. 7, Line 1 to Col. 8, Line 9].

With respect to claims 2-4, Zhang discloses the TLB 702 receives the virtual

address and the comparators 706 compare the minimum virtual page number (e.g., bits

50, 64) with corresponding portions stored in the TLB entries; it is determined whether

the minimum virtual page number of the virtual address matches a corresponding

portion of any of the TLB entries; Page_Size[0] fields are inspected, i.e., a decoder-

comparator 708 inspects the Page_Size[0] fields associated with matching TLB entries,

the variable bit strings of the matching TLB entries are decoded to determine the page

size and the bits to be compared. For example, the decoder-comparators 708 decode

the variable portions of the TLB entries to determine page sizes and bits to compare.

(See Col. 7, Lines 28-65.]

With respect to claim 5-7 and 9-10, Zhang discloses virtual memory address

fields and a 1-bit bit vector for encoding a page size within a virtual address, the

minimum page size occupies bits 50 & 64, the bit vector, referred to as Page_Size,

includes a variable number of bits depending on the number of supported page sizes

where Page_Size includes anywhere from 0 to Max-1 bits, where 2^{Max} is the number of

supported page sizes [Fig. 5C; Col. 6, Lines 20-39].

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

US 6,047,354 (Yoshioka; Shinichi, et al.) teaching data processor for

implementing virtual pages using a cache and register.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Pierre-Michel Bataille whose telephone number is (571)

272-4178. The examiner can normally be reached on Mon-Fri (8:00A to 4:30P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew M. Kim can be reached on (571) 272-4182. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Pierre-Michel Bataille

PIERRE BATAILLE
PRIMARY EXAMINER